Constants 1 - artefacts

2. Eddington et al - superstrings

3. necessary conditions for complexity

4. Some constants have random components

5 - Wormhole interactions

We need to use most probable value consistent with the anthropic constraint.
- not the most probable value of the constants in an absolute sense.

Categories of thought

random sequences are incompressible
Science is a search for compression (generating algorithms for sequences of observations).
Human minds look for compressions that might not be there

↳ Sequence of culturally-conditioned paradigms - clockwork → dynamism → steam engine → finite discrete computer - God as a computer in the sky.

John Barrow : Theories of Everything

History: Mythological accounts.
Approaches for a TOE - Scientific account.

1. Laws
2. Initial conditions
3. Forces, particles
4. Constants
5. Broken symmetries
6. Selection effects.
7. Organizing principles
8. Categories of Thought

Symmetry principles - Conservation Laws.

Initial Conditions

1. Inventory distinct from laws.
2. Economics - Sidel
3. Cosmological initial conditions
4. No Initial condition
5. Nature of time

The Limits of Science

1. standard model of science – ~~learn~~ learn truth about the noumenal world, world of reality behind appearance.
2. Criticism < positivism – foundationalism / Relativism

3. Realism ? Pragmatism (C.S. Peirce)
   Putnam internal realism
   phenomenal v. noumenal reality, Kant
4. What would a completed science look like?
   – reduction
     deductive explanation
     Unification
   But: the computation gap – autonomy of the sciences
   (Scientism vs. real science)
   description versus explanation
   – laws of nature – Humean
     – necessitarian
     – role of causation

5. Role of (a) indeterminism
   (b) boundary / initial condition
6. Possibility of a rational physics?

7. objectivity / subjectivity
8. Role of observer
9. Anthropic explanation
10. what does science leave out? The view from somewhere. Man in Nature. Realism
   Existentialism – Absurd, Act of choosing

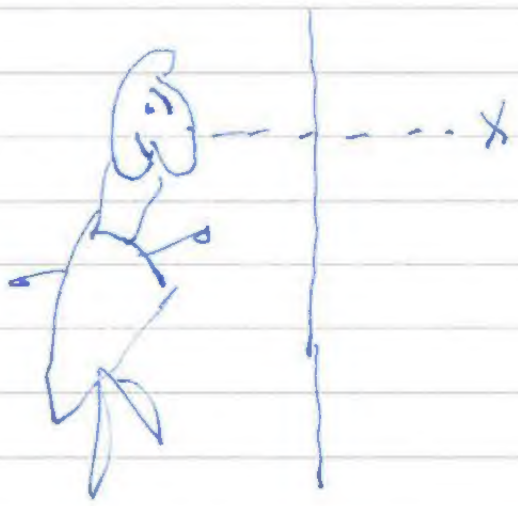
11 Insolubilia: du Bois-Reymond v. Ernst Haeckel

12. Question protagonists
13. Progress – cumulative v. non-cumulative

14. Pragmatic limitations
— logarithmic deceleration.
Malthusian scenario

15. Note $B_1 \equiv P \wedge (P \to Q)$ or $P \wedge (P \supset Q)$
when $Q \vdash P$ or $P \wedge (\neg P \vee Q)$

The World and the Senses



Theory & observation

Supposed level of immediate experience